

"reflects nothing more than an undocumented conversation with a vendor about a hypothetical 80,000 line switch with unknown features and an unspecified concentration ratio," which should, in any event, have been removed from the average costs reported at the other data points.¹ It adds that switches normally are installed to meet demand for a reasonable period and then expanded by addition of capacity, and that the McGraw-Hill study relied on by Hatfield itself recognizes that those additions typically cost more per line than the original installation inasmuch as the switch vendor at that point has a nearly captive customer. Similarly, New York Telephone challenges Hatfield's assumed costs for fiber optic terminations and remote terminals, contending that they lack any firm basis (Dr. Mercer having referred, for example, only to "experience" as the basis for the assumed cost of a fiber optic termination) and that the costs actually experienced by New York Telephone in the marketplace are much higher.

New York Telephone also challenges various aspects of structure installation costs, noting, for example, that the 1996 National Construction Estimator, cited by Hatfield proponents as supporting their trenching costs, in fact demonstrates the error in Hatfield's premise that per-foot trenching costs do not increase with the number of conduits installed in a single trench. It suggests that the National Construction Estimator, properly employed, would produce a trenching cost estimate in New York City, for a 15-duct run, of \$408.24 per foot, rather than the Hatfield proponents' estimate of \$70.00 per foot. A similar analysis, according to New York Telephone, suggests an average price of approximately \$13,700 for the purchase and installation of a manhole in New York City, in contrast to the Hatfield proponents' estimate of a \$3,000 average price. New York Telephone suggests this is a systematic understatement of pricing that reflects a result-driven approach and that incorporates data from other states without regard to their bearing on New York.

¹ New York Telephone's Initial Brief, p. 110, citing Tr. 2,826.

It offers a list of additional alleged errors, such as the assumption that 65% of distribution cable in Manhattan is on telephone poles and the premise that construction costs per square foot are less than half the actual figure in New York.

In response, AT&T disputes New York Telephone's structure cost calculations, noting its trenching cost rests on a "bogus" example involving a galvanized rigid steel conduit encased in a three-inch concrete envelope. And, it adds, the cost used in New York Telephone's own study is more than double the cost of the example.¹ With regard to manhole costs, it contends New York Telephone's reference to the National Construction Estimator involves a sewerage manhole, much more costly than one for feeder cable. It contends as well that the McGraw-Hill switch price data are the best publicly available data on switch prices, noting the reluctance of both buyers and sellers to disclose actual prices.

MCI notes that "the vast majority"² of the Hatfield Model's inputs can be adjusted by the user and that New York Telephone's exclusive control of documentation about the prices it pays requires the Hatfield proponents "to rely on whatever information they can develop to make the inputs."³ It asserts as well that New York Telephone has offered no record evidence to support its inputs; that when New York Telephone ran the Hatfield Model, it used many of the same inputs as Hatfield; and that New York Telephone ignores Hatfield inputs that are more favorable to it than the inputs it itself used. Finally, in MCI's view, New York Telephone's current actual costs, to which New York Telephone compares the Hatfield inputs, are not relevant to a TELRIC analysis inasmuch as New York Telephone itself recognized that the purpose of the TELRIC exercise is not to determine the incumbent LEC's actual costs, but rather those that would be

¹ AT&T's Reply Brief, pp. 117-118.

² MCI's Reply Brief, p. 13.

³ Id.

incurred by an efficient competitor.¹ In this vein, it cites its witness' testimony that New York Telephone's estimated per-line costs for switches are significantly out of line with those of the industry as a whole.

3. Discussion

Though in some sense an input issue and presented here as such, the question of network configuration--whether to use New York Telephone's existing routes or to construct a network using the Hatfield paradigm--pertains to the essential method used by each model and is considered in that context below.

To the extent they are not dealt with below, in the discussion of fiber versus copper, MFS's concerns related to ISDN present issues that go beyond the elements under consideration here. ADSL and HDSL are not among the elements under review here, and MFS, if it wishes to raise issues relating to them, may do so, in the first instance, through renewed negotiations with New York Telephone regarding its interconnection agreement. If those negotiations do not resolve the issue promptly, MFS may apprise us, and we will consider what further action may be needed.

The following subsections resolve other specific issues described above. To the extent inputs are not discussed here, they are included in their respective models in the manner proposed by the model's advocate.

a. Fiber v. Copper

New York Telephone's projected deployment of all-fiber feeder is among the most hotly contested issues in the proceeding. New York Telephone's adversaries offer incontrovertible evidence that New York Telephone contemplates installing a broadband system and that fiber and associated equipment are needed for that system. But that is very different

¹ MCI's Reply Brief, p. 15, citing New York Telephone's Initial Brief, pp. 115-116.

from saying that New York Telephone is installing fiber solely, or even primarily, to advance its broadband plans; and New York Telephone asserts that fiber has become the technology of choice even for a narrowband, voice-only system. If that contention is right, a forward-looking construct would use fiber to determine the stand-alone costs of narrowband, and the theoretical issues raised in the Kahn and Shew article debated by New York Telephone and AT&T would be moot.

The Hatfield proponents make much of the CSA cross-over guideline, but New York Telephone has shown why the reference to the CSA is inapt. In addition to those considerations, it appears that the CSA pertains to long distribution lines, not to the feeder lines at issue here.

More broadly, a 1991 analysis presented to the Communications Division by New York Telephone showed positive benefit to employing fiber technology for the remaining 25% of feeder relief jobs that were still using copper. Those findings were reported in the ensuing staff report in the Network Modernization Proceeding and reflected in our decision.¹ In brief, the investment costs associated with fiber exceeded those of copper, but the difference was found to be more than offset by the lower provisioning and maintenance costs of fiber. And the use of fiber permits the construction of self-healing SONET networks, in which outages become much less likely.

The Hatfield Model's contrary results, which show higher costs for fiber, cannot be fully explained. They may be attributable to a failure to recognize adequately the lower provisioning and maintenance costs of fiber, or to use of higher prices for the associated DLC equipment. But in view of the prior staff analysis, which has not been compellingly refuted, we cannot conclude that New York Telephone, by reflecting in its study its actual forward-looking practice of installing 100%

Case 91-C-0485, New York Telephone Company - Network Modernization, Staff Report Assessing Network Modernization Needs and New York Telephone's Plans (November 4, 1992), p. VII-10; Opinion No. 94-7 (issued March 14, 1994).

fiber feeder, has inflated the costs of its narrowband network or required purchasers of network elements to subsidize its broadband ventures. In addition, it should be borne in mind that competitors, in the future, may want to use purchased elements to provide enhanced services to their own customers, and that fiber may prove useful for those purposes.

Accordingly, we will make no adjustment to New York Telephone's model in this regard and will adjust the Hatfield inputs to assume 100% fiber feeder.

b. Switching Costs

New York Telephone's study used an average total installed switch investment of \$586 per line; the Hatfield Model, in contrast, used a figure of \$125 per line. The wide disparity itself calls the figures into question; and the record, and our independent analysis, suggest neither figure is reliable. The New York Telephone study, for example, leaves obscure some of the key inputs into the SCIS; these include the prices paid for switches and the discounts reflected in those prices, the features (such as call waiting) available through the switches that are modeled, and the estimated number of customers subscribing to those features. In addition, New York Telephone modeled only four central offices, and its study implies a total switching investment significantly exceeding the 1995 embedded figure of approximately \$4.5 billion.

The Hatfield Model, in contrast (but no less counter-intuitively) produces switching investment amounting to only about 30% of that embedded figure, without any showing that the embedded cost is inflated by so large a percentage. And it, too, is obscure as to some of its assumptions about needed equipment and relies heavily on data not specific to New York Telephone. In addition, it estimates per-line costs on the basis of the relationship of switch size to total switching costs, a relationship disputed by New York Telephone and contrary to the results described below.

In these circumstances, our staff examined the data on switching costs closely. It computed a per-line cost of \$303.89 for total installed switching investment. It reached this result by examining the actual cost of switches installed in 1993 and 1994, the last two years for which complete data are available and years recent enough to be used as a basis for projecting future costs. It then adjusted that switch cost downward to reflect the declining per-line price of switches within the industry generally¹

More specifically, data provided by New York Telephone in connection with the 1995 depreciation represcription process show 33 switch installations during 1993 and 1994, ranging in size from 485 to 58,755 lines. The total number of lines is approximately 369,284 and the total investment is \$112.2 million, producing an average cost of \$303.89 per line. Variation around that average was not great: except for two outliers (at \$75 and \$236 per line), all switches, regardless of size, had per-line costs between \$299 and \$343, and most fell within a range of \$299-\$330. No statistically significant relationship could be found between switch size and per-line investment, suggesting that the Hatfield premise of per-line costs declining with switch size may be in error.

Recognizing that the price of switches was continuing to decline, staff adjusted the \$303.89 figure downward by 5.72%, reflecting continuation of the downward trend through 1996. The resulting per-line price was \$286.51.

To translate that cost into switch price inputs, staff divided it by an adjusted installation factor of 1.373 and subtracted, consistent with Hatfield Model documentation, \$16 per trunk port. The resulting input of \$192.67 was used for each of the Hatfield switch-size data points, consistent with the observation that per-line costs do not vary with switch size. An

It did not take account, however, of the atypically large discounts received by New York Telephone from its vendors after 1994 in connection with a major switch replacement program.

analogous adjustment was made to New York Telephone's figure for switch material investments in Part B of its witness Curbelo's workpapers.

The foregoing method has the advantage of being firmly grounded in actual experience, incorporating many more data points than the Hatfield method, and incorporating none of the unexplained premises that lead both Hatfield and New York Telephone to come up with their widely divergent overall investment figures. And by recognizing declining switch prices through 1996, it avoids excessive reliance on New York Telephone's actual costs, imputing the benefits of steps that might be taken to reduce those costs. It reasonably makes use of data in the record and data of which we may take notice and produces a result well within the range suggested by the record as a whole. In view of its rational basis and clear superiority to specific figures on the record, we adopt it as the switching cost input to be used in both models.

c. Construction Costs

The record does not permit definitive determination of the proper construction costs to be employed. On a qualitative basis, however, one can grant AT&T's premise that New York Telephone has used extreme examples, and that the costs may not be as high as New York Telephone suggests, but still conclude that New York Telephone has shown ample reason to question AT&T's figures. In particular, AT&T's costs, based on the National Construction Estimator, appear not to take into account the uniquely high costs of construction in Manhattan, where a wide variety of costly procedures and scheduling requirements must be adhered to.

In the absence of more definitive numbers, no adjustment is being made to the Hatfield inputs on this account. The likelihood of these costs being underestimated, however, is a factor suggesting the overall Hatfield results are understated.

Expenses and Joint and Common Costs

1. New York Telephone's Study

a. Description

To convert investments into recurring expense levels, New York Telephone's study applied carrying charge factors (CCFs), defined as a ratio between the expenses associated with a given network element and the corresponding plant investments. Expenses incurred for specific plant accounts are said to be attributed only to those investments, while expenses that are not specific to plant accounts are spread equally across all relevant investments. As summarized in New York Telephone's brief,

- The CCF for a particular plant account and for a particular type of expense is calculated as the ratio of current expense in that category to current investment in the relevant account: $CCF = \text{expense/investment}$.
- The periodic (monthly) costs for a particular component of a particular network element are determined by adding up the expenses associated with that component. The amount of each type of expense is determined by multiplying the CCF applicable to that component and that expense by the forward-looking (TELRIC) investment for that component.¹

New York Telephone takes the position, challenged by AT&T, that even though the CCFs are based on current expense/investment ratios, their application to the lower investments that result from application of the TELRIC method adequately captures potential forward-looking efficiencies.

New York Telephone's CCF consists of the following components:²

¹ New York Telephone's Initial Brief, pp. 79-80 (emphasis in original).

² Exhibit 131, Part E.

1. Return, Interest, and Federal Income Taxes (FIT)
2. Depreciation
3. Maintenance
4. Ad Valorem
5. Revenue Loading
6. Directly Attributable Joint Costs
7. Common Costs

The return, interest, and FIT CCF uses the cost of capital input to determine the carrying charges on the theoretical investment. The depreciation CCF uses the depreciation lives input to determine the portion of the investment to be recovered each year.

The maintenance CCF begins with 1995 expenses for repairing and rearranging plant and equipment, adjusted to reflect certain reduced maintenance costs associated with newly placed cables and to remove subscriber-trouble testing expense on the premise that a purchaser of network elements would perform its own subscriber trouble testing.

New York Telephone's ad valorem CCF is used to recover non-income related taxes (such as special franchise and property taxes). The revenue loading CCF, tied to the level of revenue, recovers the PSC assessment and uncollectibles. With respect to the latter, New York Telephone took the position that its wholesale uncollectibles, such as negotiated bill adjustments, would equal or exceed its current retail uncollectibles.

The "directly attributable joint CCF" is said to capture credit management, sales, service order processing, and customer accounting costs, exclusive of those associated with retail operations; capital requirements associated with investments not directly used to provide network elements; and general and administrative (G&A) expenses. The remainder of G&A expenses are recovered by the common cost CCF. Whether New York Telephone's study adequately excluded costs related to retail operations is a contested issue, discussed below, as is its treatment of G&A functions.

b. Issues

i. Retail Costs

Noting the FCC's statement that "retailing costs, such as marketing or consumer billing costs associated with retail services, are not attributable to the production of network elements that are offered to interconnecting carriers and must not be included in the forward-looking direct cost of an element,"¹ various parties contend that New York Telephone failed to remove all excludable retail costs. MCI characterizes the study as having generally assumed that 10% of joint and common costs are attributable to retail operations but sees no evidence to support that factor, citing examples of cost categories that, in its view, could be directly removed. AT&T, arguing in greater detail, challenges New York Telephone's view that even if it gave up its retail business it would continue to incur most of its existing advertising, product management, general purpose computer and network, and general support expenses. It contends that New York Telephone removed only relatively small percentages of the expenses in the accounts viewed by the FCC (in its rules governing the discount to be applied to services offered for resale) as avoidable in the rendition of wholesale service. It notes, for example, that New York Telephone has removed only 12% of its 1995 advertising expense and 25% of product management expense, and it contends that New York Telephone offered little if any testimony to support these judgments. Noting our determination, in the resale decision, that 90% of New York Telephone's product management expenses would be avoidable in a wholesale context, AT&T contends that the same percentage should be removed here. With regard to advertising expense, AT&T challenges, as not comparable to the activities of a monopoly supplier of bottleneck network elements, New York Telephone's analysis of advertising expenditures by major wholesalers. Incorporating by reference its arguments in the wholesale discount phase of the proceeding, AT&T maintains that, at a

¹ First Report and Order, ¶691.

minimum, we should require New York Telephone to exclude from its CCF calculations the same percentages of expenses in various accounts that were treated as avoidable in calculating the wholesale discount, and should use the same pro rata approach to determining excludable retail costs as it did in determining avoidable indirect costs.

In response, New York Telephone cites a list of retail expenses that were removed in addition to the 10% adjustment cited by MCI. It explains that it first identified and removed strictly retail operations from directly attributable expenses, next identified and removed identifiable indirect retail expenses (such as retail computer expense) and only then did it apply a 10% factor to remaining indirect expenses "in order to approximate indirect expenses attributed to retail functions."¹ With specific reference to the product management account, New York Telephone argues that the activities reflected in that account remain essential in a wholesale market in order, for example, to avoid incompatibilities with products that others wish to provide over the unbundled elements or to insure that proper technologies are deployed. New York Telephone maintains that functions such as these are required for a company regardless of whether it serves at retail, wholesale, or both.

Anticipating the arguments regarding the wholesale discount decision, New York Telephone asserts, in its initial brief, that the decision's "top-down" construct, in which the starting point is retail rates, may treat as avoidable, and therefore exclude, retail-related costs that are not properly omitted in "bottom-up" construct at issue here. In addition, it contends, the offering of services for resale and the provision of access to unbundled network elements are different lines of business that may involve different costs with respect to such activities as product management. Finally, it suggests evidence in this case (such as its quantitative study of advertising costs

¹ New York Telephone's Reply Brief, p. 43.

incurred by wholesalers¹) may undermine the evidentiary basis for the wholesale discount decision.

AT&T responds that it sees neither evidentiary basis nor logic supporting the distinction New York Telephone would draw between a top-down and bottom-up analysis; that New York Telephone's distinction between the two lines of business is speculative, as evidenced by its statement that they may involve different cost structures; and that New York Telephone merely cites, without arguing from, its claimed evidentiary presentation, which, in any case, pertains only to advertising and not to other retail-related costs. It adds that the Massachusetts Order rejected New England Telephone's analogous argument and directed it to exclude costs found to be avoidable for purposes of calculating the wholesale discount.

ii. Allocation Factor

Generally charging that New York Telephone's treatment of CCFs is superficial and disjointed, AT&T challenges New York Telephone's reliance on 1995 booked expenses and its assumption that, with limited exceptions, all of its 1995 booked expenses in the "6,000" series of expense accounts should be considered. It notes the FCC's expectation that a TELRIC analysis will diminish the amount of joint and common costs that must be allocated among separate offerings and its imposing on the ILEC the burden of proving the specific nature and magnitude of its forward-looking common costs. Challenging New York Telephone's view that forward-looking efficiencies are adequately captured by applying the historical CCF ratios to the forward-looking TELRIC investment base, AT&T asserts that New York Telephone has not shown the difference, for any class of plant, between the investment reflected in its study and its embedded investment amounts and that TELRIC investment, for certain categories, may exceed embedded investment. MCI contends New York Telephone has conducted a "fully distributed embedded cost study," by taking

¹ Exhibit 136 (Curbelo Workpapers), Part E, pp. 187-215.

the costs not directly attributed and allocating them among the elements on the basis of existing investments rather than taking a forward-looking view of an efficient firm's costs.¹ MFS notes that New York Telephone's failure to revise the CCFs themselves, and its reliance on their application to a smaller investment base to compute savings, means that if the new technology costs the same as the embedded, but requires only half of the embedded administrative costs, no such savings could be recognized.

AT&T also criticizes New York Telephone's asserted failure to recognize anticipated efficiency gains and cost savings through restructuring and through the NYNEX/Bell Atlantic merger. AT&T notes its witness' testimony that New York Telephone has the highest costs and, therefore, presumably is the least efficient of the regional Bell operating companies and refuses "to accept at face value [New York Telephone's] implicit representation that its historical expense performance is somehow reflective of what it should achieve in a least cost, most efficient forward-looking TELRIC world."² AT&T similarly maintains that New York Telephone has provided no support for its proposals to charge \$69 million of research and development expense or \$17 million of connecting company relations expense to its competitors through the common costs CCF. In its reply brief, AT&T questions New York Telephone's characterization of merger-related savings as "speculative," noting the anticipation of such savings in statements to shareholders and investors, which are subject to civil and criminal penalties if misleading. It also notes that the Massachusetts Order directed New England Telephone to reduce joint and common costs by 22%, the excess of NYNEX cost per line over an average of nine companies including the other RBOCs. (The calculation of that excess is the subject of petitions for reconsideration by both AT&T and New England Telephone.)

¹ MCI's Initial Brief, pp. 21, 26.

² AT&T's Initial Brief, p. 75.

In response, New York Telephone contends that notwithstanding the switching investment referred to by MCI, its overall TELRIC investment is less than the embedded amount and that the application of its CCFs to the lower overall investment is conservative. It contends that in the absence of any showing of any inefficient procurement practices, current prices provide the best basis for a forward-looking analysis.

iii. Other Issues

MFS characterizes as "nonsensical" New York Telephone's allocation of joint and common costs on the basis of the percentage of employees performing certain operational functions. It sees no support for that procedure and contends that New York Telephone needed at least to have established that employees consume resources accounted for by common costs in equal measures. For example, it suggests, to be able to assign the same degree of general purpose computer expense to the outside plant account as the percentage of employees working there, New York Telephone should have shown that those employees use computers to the same extent as employees in central offices.¹

In addition, MFS alleges double recovery of joint and common costs from labor and executive functions. With respect to labor, for example, it notes that the cost of labor is calculated from information contained in the ECRIS database but that New York Telephone admitted that the labor rates in ECRIS already are fully loaded.

New York Telephone responds that allocation of nondirectly attributable joint and common costs is necessarily somewhat arbitrary and that doing so on the basis of number of employees is reasonable, though other methods could be envisioned. It denies any double recovery, explaining that the labor rates taken from ECRIS reflect capitalized labor while the labor dollars captured in the CCFs reflect maintenance expenses, a separate item. It also shows that the total executive expenses

¹ MFS' Initial Brief, pp. 42-44.

were allocated in a manner that does not constitute double recovery.

2. The Hatfield Model

a. Description

The Hatfield Model's expense module calculates per-line and per-month cost summaries for each network element, incorporating capital carrying costs, operating expenses, network operation expenses, and attributable support expenses. It uses ARMIS data to calculate expense-to-investment ratios that are then applied to the investments in different plant categories. User inputs include depreciation lives, cost of capital, and the factor by which network expenses are to be reduced on a forward-looking basis. For variable support (overheads) it applies a factor of 10% of total element costs, which it regards as conservatively recognizing the fact that historical variable support expense levels for LECs have exceeded those for similar service industries operating in more competitive environments.¹ The figure reflects a regression analysis showing a correlation between overhead costs of incumbent LECs and firm size and outputs; the factor used is 10%, that shown by AT&T (as a telecommunications firm subject to competition) in its 1994 annual report to the FCC.²

b. Issues Raised

New York Telephone challenges the Hatfield Model's 10% variable overhead factor, denying there is any basis for assuming a direct linear relationship between a firm's outputs and its common costs. It sees as fallacious the premise that attributes detected within a group can meaningfully be applied to a specific member of the group, suggesting that what Hatfield has done is analogous to "finding a statistically significant linear

¹ Hatfield Model Description, p. 38.

² Tr. 2,602-2,603 (MCI witness Mercer).

correlation between height and weight and concluding that any given person will grow shorter if he goes on a diet."¹ It also regards the analysis as internally inconsistent insofar as the regression is performed across a group of various-sized local exchange carriers but the overhead factor used is derived from AT&T, an interexchange carrier that was not part of the group studied and that assertedly possesses different cost characteristics. It sees no justification for the assumption that AT&T's reported overhead in one year is pertinent or that 1994 was the proper year to select, noting the variation in the factor from year to year. It adds that the variable overhead factor for AT&T's New York subsidiary--which presumably faces costs more like those faced by New York Telephone--is higher than that for AT&T as a whole. New York Telephone also sees no basis for the Hatfield Model's assumption that forward-looking network operations expense can be reduced by 30%, regarding that assumption as arbitrary and unjustified and suggesting that competition and the loss of economies of scale may actually lead to increased expenses in some categories.

AT&T responds that its presentation is based on the empirical analysis contained in its regression analysis, common sense, past experience, and academic literature demonstrating that various overhead functions vary directly with the size of the firm; and it claims that New York Telephone's criticisms are unsupported by any evidence to the contrary. Disputing New York Telephone's effort to analogize its position to conclusions about height and weight, AT&T contends that the proper analogy would be to a statement that "if I am four inches shorter than another person then on the average I am ten pounds lighter." It says it relied on 1994 data because they were the most current that followed the accounting rules used by incumbent LECs and that because the relationship demonstrated by the regression analysis reflected past practices in a monopoly environment, the actual mark-up was properly reduced to reflect likely efficiency gains

¹ New York Telephone's Initial Brief, p. 98.

under increased competition. MCI, meanwhile, notes that the model does not assume a 30% reduction in all expenses due to competition but only in network operations. It insists that the 10% factor is based "on unrefuted evidence that there is a statistical relationship between the size of the firm and the level of overhead costs."¹

3. Discussion

To begin with a relatively straight-forward aspect of this group of issues, our wholesale discount opinion provides clear precedent for defining the retail costs to be excluded from this exercise. As AT&T correctly argues, New York Telephone's effort to distinguish the situations is supported neither by persuasive evidence nor by logic, and costs found avoidable in Opinion No. 96-30 should similarly be denied recovery through the prices to be set here.

The debate over whether overhead costs are correlated with firm size is fruitless: clearly, a regression analysis such as the one relied on by Hatfield demonstrates a likelihood, but by no means a certainty, that any individual firm will fit into the identified pattern. The analysis should not be taken as more (or less) meaningful than that, as the parties themselves appear to recognize beneath their rhetorical flourishes on the point. More troublesome is the 10% factor selected on the basis of AT&T's 1994 experience and intended to impute a degree of productivity on top of the 13% suggested by the regression.² The corresponding figure for AT&T's New York subsidiary, however, is 14%; the 1995 figure for that subsidiary is 16%;³ and New York

¹ MCI's Reply Brief, p. 13.

² Exhibit 143, NYT-ATT-186; Exhibit 142, NYT-MCI-11.

³ New York Telephone's Initial Brief, p. 99.

Telephone's corresponding 1995 figure is 18%.¹ These figures suggest 10% is unrealistically low; and we shall take account of New York Telephone's actual experience, and impute a reasonable degree of forward-looking productivity gain, by using a variable overhead factor of 15%.

In estimating its forward-looking network operations factor, the Hatfield Model assumed a 30% reduction in New York Telephone's network operations expense as reported in ARMIS data. The figure was said to be based on Hatfield's judgment, along with data in a California proceeding suggesting a reduction as high as 45% might be warranted.² But the record in the California proceeding was inconclusive and contained testimony by Pacific Bell suggesting Hatfield had underestimated expenses in numerous categories. While it is proper to reflect reasonably anticipatable productivity gains, the 30% figure is not adequately supported. In the New York Telephone Incentive Regulation proceeding, staff and New York Telephone had submitted studies suggesting annual productivity of 4.6% and 4.33%. Recognizing those productivity levels, along with the prospect of additional productivity gains that can reasonably be expected to ensue from the development of competition, we will use a productivity offset of 10% for purposes of a Hatfield run.

Several changes are needed in the tax factors used in the Hatfield Model. The federal income tax rate should be reduced from 40% to its actual level of 35%; the state income tax factor should be 5%; and the local income tax factor should be zero.

¹ The figure is derived as follows, using data in New York Telephone's 1995 Annual Report to the Commission:

| | <u>\$M</u> |
|---------------------------------|------------|
| A. Operations Revenue | 7,620 |
| B. Corporate Operations Expense | 1,170 |
| C. Net Revenues (A-B) | 6,450 |
| D. Ratio (B/C) | 18.1% |

² Exhibit 143, NYT-ATT-134; Tr. 2,883-2,884.

New York Telephone, for its part, is unpersuasive when it argues that forward looking expense reductions are adequately captured by application of historical CCFs to a presumed lower investment base. MFS properly emphasizes the need to recognize separately the potential savings in investments and in expenses reflected in the CCFs. To do so, we will apply to New York Telephone's joint and common cost CCFs the same 10% offset used in the Hatfield calculations.

Finally, New York Telephone's maintenance CCF appears to take a reasonable view of the amount of maintenance to be performed. To the extent it involves fiber maintenance, it relies on historical data related to new installations. Newly installed plant is likely to have relatively low maintenance costs, and the recent historical costs are unlikely to fall. For copper plant, the historical maintenance costs relied on by New York Telephone involve primarily moves and rearrangements routinely required by external factors, and repairs. The former are unlikely to change, since the factors necessitating them will continue in force. As for the latter, 70% are attributable to troubles in old plant, and, to reflect the TELRIC premise of a newly installed system, New York Telephone reduced repair costs by 60% of that 70%.¹ That adjustment appears to take an adequately forward-looking view of the maintenance CCF, and no further adjustment is needed.

What the maintenance CCF lacks, however, is any recognition of productivity improvements in maintenance operations. What is involved here is limited to the labor productivity of personnel performing maintenance on whatever types of equipment are involved. Taking account of the potential sources of productivity gain, the maintenance CCF will be reduced

¹ Exhibit 136 (Curbelo Workpapers), Part E, p. 146.

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by a 2% labor productivity adjustment, consistent with that applied in some rate cases.¹

Results of Input Adjustments

Adjusting the models' inputs consistent with the foregoing recommendations causes their results not merely to converge but sometimes to cross; the Hatfield Model in some instances turns out to produce higher cost figures than New York Telephone's study. With respect to loops, running the models with the revised inputs suggests a statewide average cost of \$14.54 per Hatfield and of \$14.57 per New York Telephone. To greater or lesser degrees, similar patterns appear with respect to the other elements under review; they are shown in Schedule 1 of Attachment C and their derivation is shown in Schedule 2 of Attachment C.

As discussed further in the following section, these results define a sharply narrowed range of reasonable results that may be reached on the record here.

GENERAL ISSUES OF METHOD

In addition to the extensive critiques already set forth, the parties attacked each other's models on various methodological and procedural grounds. Stated most generally, the Hatfield proponents regard New York Telephone's model as a study that is not really forward-looking, as TELRIC requires, and that is totally unsupported on the record inasmuch as the study described in New York Telephone's evidentiary presentation is not, in fact, the study the company actually conducted. New York Telephone, meanwhile, contends that the Hatfield Model is based on false assumptions and flawed methods, has never been validated, contains numerous errors, and has been rejected, for the most part, in the jurisdictions that have considered it.

¹ E.g., Case 95-G-1034, Central Hudson Gas & Electric Corporation - Rates, Opinion No. 96-28 (issued October 3, 1996); Case 93-E-1123, Long Island Lighting Company - Rates, Opinion No. 95-8 (issued July 3, 1995).

New York Telephone's Model

1. The Nature of the Evidence

To obtain much of the information that was used in its study, New York Telephone solicited data from its field engineers and distributed to them a template that was to be used in gathering the data. The version of the template provided by New York Telephone in pre-hearing discovery specified the data broken out into the four density zones used in New York Telephone's study. During the course of cross-examination, it became apparent that New York Telephone had initially contemplated the use of more than four density zones, had distributed templates reflecting additional zones to its engineers, and had supplied the four-zone template in error. Following that disclosure, discovery was reopened and New York Telephone supplied additional documents. Some of these, including engineering work papers reflecting five density zones, were supplied during the hearings on November 4 and marked as Exhibits 161 and 162; the remainder were supplied under cover of letters dated November 8 and November 20 and admitted by later ruling as Exhibits 224 and 225. According to the Hatfield proponents, these new documents establish important discrepancies between the study actually conducted by New York Telephone and the study presented through its evidence.

On that basis, AT&T maintains that "because [New York Telephone's] actual cost study is unsupported by sworn testimony and has not been subjected to the crucible of evidentiary hearings, [it] may not be relied upon as a basis for any decision in this proceeding."¹ AT&T contends, for example, that the late-produced documents show that the data collection template presented as Exhibit 162 is populated with inputs determined at New York Telephone's headquarters, and not with responses from field engineers. Further, when field engineers revised some inputs initially specified by headquarters in ways that

¹ AT&T's Initial Brief, pp. 23-24.

headquarters did not like, the input from the field engineers was ignored and new inputs were provided by headquarters.

AT&T offers, for example, the headquarters determination that 30% of Manhattan lines should be considered served by a particular type of DLC equipment (referred to as ONU-96) rather than the 0% of lines that the field engineers had regarded as served by ONU-96. AT&T sees no record evidence as to why the field input was overruled in this way. It contends further that the post-hearing materials provide additional confirmation that the engineering inputs developed at headquarters reflect a broadband network and that there exist other gaps between the record and what really occurred. Similarly, MFS cites various fill factors that had been reduced by central staff from the levels reported by field engineers; these include copper distribution cable (reduced from 65% or higher to 40%) and conduit (reduced from 65% to 60% in the major cities zone.)

AT&T goes on that New York Telephone's engineering witness Gansert had never seen or reviewed the input sheets completed by the field engineers, that he was unaware that data had been gathered on more than four density zones, and that he believed that the engineering inputs for the study had come from the field and that the headquarters role was limited to weighting inputs. Accordingly, in AT&T's view, the basis for the engineering inputs to New York Telephone's study is unsupported by any sworn testimony.

Similarly, AT&T contends that there is no evidence explaining how and by whom the five-density-zone study was transformed into a four-density-zone study. It cites evidence that New York Telephone witness Curbelo was aware of and involved in the five-zone study and that the decision to change to four zones was made only a week before the study was filed; nevertheless, it asserts, Mr. Curbelo did not address himself to the five-zone study, and material reflecting that study was omitted from New York Telephone's interrogatory responses.

Finally, AT&T contends that these flaws in New York Telephone's presentation, and, in particular, its omission of any reference to the five-density-zone study in its filed evidence, in its discovery responses, and in the technical sessions at which parties were able to probe each other's cost studies, show a failure to provide the degree of documentation required by Judge Linsider's September 9 ruling. AT&T notes and reiterates its statements in previous pleadings that "[New York Telephone's] discovery responses and witness testimony were, in material respects, false and misleading."¹ MCI and MFS express similar concerns about New York Telephone's study. MFS alleges that Mr. Gansert's sworn testimony that he was unaware that data had been gathered on more than four density zones "appears intentionally false."²

In response, New York Telephone contends that it was not obligated to disclose all communications concerning the development of its model and inputs, and that the Hatfield proponents did not do so for their model; that the absence of specific disclosure regarding the initial collection of data by five density zones has no bearing on the integrity of the final study presented by New York Telephone's witness; that the move from five density zones to four was made after preliminary data analysis and reflects "nothing more than a decision to combine New York City into the 'major cities' zone in the final studies because of the minimal cost difference that appeared to exist between these two zones"³; that, in any event, New York Telephone never hid the existence of a preliminary five-zone approach, including it in the computer diskettes served with its direct testimony; and that the erroneous reference to the four-zone template in its interrogatory responses was not an intentional

¹ AT&T's Initial Brief, p. 36.

² MFS' Initial Brief, p. 58.

³ New York Telephone's Reply Brief, pp. 4-5. Some of New York Telephone's argument reported here are from passages in its reply brief that AT&T regards as improper.

effort to mislead nor was the testimony of any of its witnesses misleading. It points to the amount of material it turned over in response to information requests, and it notes, among other things, its witness Gansert's testimony that the data collected from the field had been analyzed by central engineering staff and reviewed for reasonableness on the basis of its engineering judgment. Nevertheless, it continues, the nature of that judgment and the responses submitted by the field engineers were not probed by any party during prehearing discovery. It sees no basis for any claim that it withheld data or misrepresented facts and asserts that errors will occur in any complex case involving the exchange of a great deal of information.

With respect to the charge that the cost study described by its witnesses differs from the study actually performed, New York Telephone contends that analysis and refinement of data by the central office staff is normal in a study of this type and that "from the outset, it was clear to everyone involved in the [New York Telephone] studies that such a process of interpretation and judgment by the central staff would be required." It contends that data from the field, especially in the context of a TELRIC study being performed for the first time, must be interpreted and applied appropriately and that Mr. Gansert's testimony recognized as much and did not imply, as AT&T says, that the headquarters' role was limited to weighting inputs. It cites statements by Mr. Gansert that the central staff group used their judgment and expertise and that the process should not be portrayed as simply a mathematical weighting. Nor does it see any basis for requiring it to explain differences between the inputs used in the final study and the initial field responses, contending that the basis for inputs can be pursued through discovery but that requiring a party to explain each input fully in its prefiled testimony would pose a virtually impossible burden to no useful purpose and would

Ibid., p. 8.

establish a standard that had not been met by the Hatfield Model either.

Substantively, New York Telephone asserts that the revisions by central staff were in areas where central staff had superior knowledge or had acted to correct misunderstandings by the field and do not involve field conditions of the sort that field engineers are best equipped to evaluate, such as loop length data, structural inputs, or routing. With respect, for example, to the ONU-96 equipment referred to by AT&T, it explains that at the time the field study had been conducted, ONU-96 was not included as an approved option because final testing of the product had not been completed. Central staff, however, was aware, by the time of its review, that ONU-96 was the recommended DLC option for certain applications and it therefore properly substituted this product. (New York Telephone also attempts to refute AT&T's claim that ONU-96 is a more costly option.¹) AT&T, in response, offers reasons to believe that field engineers were aware of the ONU-96 decision.² With respect to MFS' challenge to central staff having reduced from 65% to 40% the utilization factor for copper distribution cable, New York Telephone contends that it did so because of the field engineers' failure to understand the term "utilization" in a manner consistent with a TELRIC study.³

Finally, with regard to the claim that it has not met its burden of proof, New York Telephone responds that the parties raising the claim do not define the burden of proof they believe

¹ The issue, like many, is multi-faceted and therefore difficult to resolve simply. ONU-96 units are more costly than the alternative OSP-672 units on a per-capacity-line basis, but, when placed in a remote site serving 200 lines or less, tend to be less costly on a per-line-actually-served basis. And these circumstances are more likely to obtain in a dense major-cities environment than in less dense urban or suburban settings.

² AT&T's Reply Brief, p. 72.

³ New York Telephone's Reply Brief, p. 14.